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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,761	05/10/2006	Hideki Ichihashi	9369-118US	6186

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EXAMINER	
GILLESPIE, BENJAMIN	
ART UNIT	**PAPER NUMBER**
1796	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,761	ICHIHASHI ET AL.	
	Examiner	Art Unit	
	BENJAMIN J. GILLESPIE	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraph of 35 U.S.C. 103(a) that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ube (EP 1,149,850) in view of Cox et al ('477). Ube teach polyester polyol that is reaction product of diol and dicarboxylic acid, and said polyester has a molecular weight ranging from 1,500 to 15,000 (Abstract). The dicarboxylic acid comprises both aromatic and aliphatic compounds, specifically terephthalic acid and dodecanedioic acid, and the diol consists of dodecane diol (Paragraphs 8, 15 and 16). Patentees go on to explain that polyester polyol is then reacted with polyisocyanate, thereby forming a polyurethane prepolymer, which is useful as a hot-melt adhesive and may further comprise plasticizer, tackifier, and antioxidants (Paragraphs 3, 23-26). Finally, Ube explain the hot-melt adhesive can bond substrates such as wood and metal, however patentees fail to teach how much aromatic dicarboxylic acid is included in the polyester polyol (Paragraph 27).

2. Cox et al also teach hot-melt adhesives comprising polyester polyol, which is the reaction product of dicarboxylic acid and diol (Abstract). In particular, the acid consists of both aromatic and aliphatic compounds such as terephthalic acid, and C_{12} aliphatic acid, i.e. dodecanedioic acid, as well as C_{12} diol, i.e. dodecane diol (Abstract; col 1 lines 64-68; col 2 lines 1-9). Furthermore, the hot-melt adhesive comprises plasticizers, and tackifying resins, and is useful in

bonding wooden substrates (Col 2 lines 20-21). What is important to note, however, is that the aromatic and aliphatic acids are present in amounts ranging from (70-100):(0-30) mol% respectively, and Cox et al explain that this formulation results in polyester that has desirable flow properties without the sacrifice of bond strength (Col 1 lines 43-52).

3. Therefore, it would have been obvious to adjust the amounts of aliphatic and aromatic dicarboxylic acid in Ube et al based on the formulation of Cox et al, since Ube and Cox et al teach analogous compositions that are directed towards polyester based hot-melt adhesives that bond the same substrates, and the specific amounts of aromatic and aliphatic acid contribute to improved processability without loss of mechanical performance. Finally regarding claims 3 and 4, although not explicitly disclosed by the prior art, one of ordinary skill would reasonably expect the rendered obvious polyester to exhibit the same properties based on identical reactants and amounts that are the same as claimed by applicant.

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ube (EP 1,149,850) in view of Unitika (JP 62-043451). Aforementioned, Ube teach hot-melt adhesives based on polyester polyol comprising the reaction product of aromatic and aliphatic dicarboxylic acid with aliphatic diol, however patentees fail to specify the amount of said aromatic and aliphatic acids. Unitika also teach hot-melt adhesives comprising polyester polyol, wherein said polyol is the reaction product of C_{12} diol and dicarboxylic acid, specifically aromatic and C_{12} aliphatic acid. In particular, patentees explain the aromatic and aliphatic acids are present in amounts ranging from (90-100):(0-10) mol% respectively (Abstract).

5. This results in adhesives that exhibit improved heat resistance without yielding adhesion strength, and therefore it would have been obvious to one of ordinary skill in the art to utilize the

same amounts of aliphatic and aromatic dicarboxylic acid as disclosed by Unitika in Ube, in order to obtain an adhesive that exhibits the same improved performance properties disclosed by Unitika. Regarding claims 3 and 4, although not explicitly disclosed by the prior art, one of ordinary skill would reasonably expect the rendered obvious polyester to exhibit the same properties based on identical reactants and amounts that are the same as claimed by applicant.

6. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krebs et al (2003/0144454) in view of Ube (EP 1,149,850) and Cox et al ('477). Krebs et al teach polyurethane hot-melt adhesive based on polyester polyol and polyisocyanate, wherein said polyester has an average molecular weight as high as 10,000, and the final composition is useful in bonding wooden substrates (Abstract; paragraphs 11-14, 32). In particular, the polyester polyol is the reaction product of dodecanediol diol, and a mixture of aromatic and aliphatic dicarboxylic acids, such as terephthalic and dodecanedioic acid. Although the relevant reactants are disclosed, Krebs et al fail to teach them with sufficient specificity, and no ratio of aliphatic and aromatic dicarboxylic acid is listed.

7. As previously discussed, Ube teach hot-melt adhesives based on polyester polyols comprising the reaction product of terephthalic acid, dodecanedioic acid, and dodecanediol. In particular, patentees explain that these reactants are preferred because they result in hot-melt adhesives that exhibit sufficient bond strength while maintaining rapid set time (Paragraph 9). Therefore, it would have been obvious to limit the reactants of Krebs et al to relevant species of Ube, based on the motivation that it facilitates application of the adhesive without losing mechanical strength.

8. Furthermore, as previously discussed, Cox et al teach polyester based hot-melt adhesive that is produced by reacting relevant compounds in amounts that satisfy applicants' claims, and what's more, Cox et al explain the resulting adhesive has desirable flow properties without the sacrifice of bond strength (Col 1 lines 43-52). Therefore, it would have been obvious to adjust the amounts of aliphatic and aromatic dicarboxylic acid in Krebs et al based on the formulation of Cox et al, since Krebs et al and Cox et al teach analogous reactants directed towards polyester based hot-melt adhesives useful in bonding the same materials, and the specific amounts of aromatic and aliphatic acid contribute to improved processability in adhesives without loss of mechanical performance. Finally regarding claims 3 and 4, although not explicitly disclosed by the prior art, one of ordinary skill would reasonably expect the rendered obvious polyester to exhibit the same properties based on identical reactants and amounts that are the same as claimed by applicant.

9. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krebs et al (2003/0144454) in view of Ube (EP 1,149,850) and Unitika (JP 62-043451). Aforementioned, Krebs et al teach polyurethane hot-melt adhesive based on polyester polyol and polyisocyanate, wherein said polyester is produced by the reaction of dodecanedioic acid, terephthalic acid, and dodecanediol. However, Krebs et al fail to teach said reactants with sufficient specificity, and no ratio of aliphatic and aromatic dicarboxylic acid is listed.

10. As previously discussed, Ube teach hot-melt adhesives based on polyester polyols that are the reaction product of terephthalic acid, dodecanedioic acid, and dodecanediol, and in particular, said reactants result in a hot-melt adhesive that exhibits sufficient bond strength while maintaining rapid set time (Paragraph 9). Therefore, it would have been obvious to limit the

reactants of Krebs et al to relevant species of Ube, based on the motivation that it facilitates application of the adhesive without losing mechanical strength.

11. Furthermore, as previously discussed, Unitika teach polyester based hot-melt adhesives that contain reactants in amounts that correspond to applicants' claims, and go on to explain that said ranges result in adhesives having desirable flow properties without sacrificing any bonding strength (Col 1 lines 43-52). Therefore, it would have been obvious to adjust the amounts of aliphatic and aromatic dicarboxylic acid in Krebs et al based on the formulation of Unitika since Krebs et al and Unitika teach analogous reactants directed towards polyester based hot-melt adhesives useful in bonding wooden substrates, and the specific amounts of aromatic and aliphatic acid contribute to improved processability without loss of mechanical performance. Finally regarding claims 3 and 4, although not explicitly disclosed by the prior art, one of ordinary skill would reasonably expect the rendered obvious polyester to exhibit the same properties based on identical reactants and amounts that are the same as claimed by applicant.

Response to Arguments

12. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN J. GILLESPIE whose telephone number is (571)272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be

reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/
Primary Examiner, Art Unit 1796

B. Gillespie